NASA Science Mission Directorate - Applied Sciences Program

Homeland Security – Fiscal Year 2005 Annual Report [*]

SUMMARY

In FY05, the Homeland Security program element focused on air transport and dispersion. The program participated in the Office of Federal Coordinator for Meteorology's efforts to pursue activities identified in the report *Federal Research and Development Needs and Priorities for Atmospheric Transport and Diffusion Modeling*.

In FY06, the Homeland Security program will focus on extending NASA Earth observations to enhance air plume transport. The Homeland Security team will also work with Lawrence Livermore National Laboratory (LLNL) to improve air transport and dispersion with surface roughness parameters.

MAJOR ACCOMPLISHMENTS

Interagency Modeling and Atmospheric Assessment Center (IMAAC) Project

In FY05 the Homeland Security team initiated a joint project with LLNL's National Atmospheric Release Advisory Center (NARAC), which provides data to IMAAC. The IMAAC will be a single source of federal hazards predictions during the response and recovery phases of "incidents of national significance." The Homeland Security team targeted improvements in key parameters in NARAC's atmospheric transmission and dispersion (ATD) modeling. An initial evaluation of the NARAC decision support tool identified aerodynamic surface roughness (z_0) as a high priority for model performance improvement. *http://narac.llnl.gov/*

The NASA team worked to prototype initial 1-km z_0 products developed from MODIS leaf area index (LAI) data over a study area in Oklahoma City associated with a 2003 release experiment. The team developed a prototype with an SRTM-derived surface height map to aid in the conversion of MODIS LAI to surface roughness. Team members began producing an ASTER classification of the Oklahoma City area to test the improvements gained by modeling z_0 at a higher resolution in the urban areas.

SOLICITATIONS

Decisions CAN

The Homeland Security Program received 15 Step-1 proposals in the Decisions CAN and encouraged 7 to submit full proposals. In Step-2, the Homeland Security program received 7 full proposals.

Following the panel reviews and internal assessment for programmatic balance, the Applied Sciences Program selected the following Homeland Security proposals for a single, combined project:

> Improved Meteorological Input for Atmospheric Release Decision Support Systems
> *PI: Thomas Warner, National Center for Atmospheric Research*
>
> An Integrated LES Modeling System for Atmospheric Dispersion of Toxic Agents: Homeland Security Applications
> *PI: Udaysankar Nair, University of Alabama–Huntsville*

[*] The FY05-09 Homeland Security Program Element Plan is available through: *http://aiwg.gsfc.nasa.gov/dss.html*

The Applied Sciences Program later selected additional proposals for one-year awards from a Congressionally-directed augmentation, including one project for the Homeland Security portfolio:

> Integration of Earth Science Results with Pest Forecasting and Risk Management Decisions
> *PI: George May, Institute for Technology Development*

ROSES 2005 – Section A.24

For the Applied Sciences portion of the ROSES 2005 NRA, the Homeland Security program received one Step-1 proposals and encouraged none to submit full proposals. The Step-2 proposals were due in November 2005 with selections expected by April 2006.

PUBLICATIONS (SELECTED)

OFCM Federal Research and Development Needs and Priorities for Atmospheric Transport and Diffusion Modeling, February 2005, NASA co-author.

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